Patent Claims

1. Process for producing a catalytic converter, in which catalytically active material (6, 6.1) is deposited on a substrate (4) as a porous or non-cohesive layer, as a result of the substrate (4) being immersed in an electrolyte (5) which contains the catalytically active material (6) and voltage being applied between the substrate (4) and a counterelectrode (3), characterized in that the catalytically active material (6, 6.1) is deposited on a metallic substrate (4), and in that an electric direct voltage (V_{dc}), on which an alternating voltage (V_{ac}) is superimposed in such a way that the sign of the sum voltage of direct and alternating voltage (V_{ac}, V_{dc}) does not change, is applied between substrate (4) and counterelectrode (3).

2. Process according to Claim 1, characterized in that the direct voltage (V_{dc}) at least corresponds to the deposition potential of the catalytically active material (6, 6.1).

3. Process according to Claim 1, characterized in that the substrate (4) is provided, on its surface (4.1) which is to be coated, with a predetermined surface roughness prior to the deposition.

4. Process according to Claim 3, characterized in that the surface roughness is in the range from 0.3 µm to 10 µm.

5. Process according to Claim 1, characterized in that the catalytically active material (6) is deposited as substantially spherical metal clusters (6.1) as a result of the alternating voltage component (V_{ac}) being applied with a frequency of over 50 Hz.

6. Process according to Claim 1, characterized in that the catalytically active material (6) is deposited as substantially dendritic metal clusters (6.1) as a result of the alternating voltage component (V_{ac}) being applied with a frequency of between 5 and 50 Hz.

7. Process according to Claim 1, characterized in that the catalytically active material (6) used is a precious metal or a mixture of precious metals and/or catalytically active materials.

8. Process according to Claim 1, characterized in that substantially spherical platinum clusters are deposited on a stainless steel substrate from a solution of a platinum compound in 0.1 M H_2SO_4 with a platinum content of approximately 0.1 g/l as a result of a modulated voltage comprising a direct voltage (V_{dc}) of approximately 1.3 volts superimposed with an alternating voltage (V_{ac}) with a voltage swing (V_{PP}) of 0.3-1 volt and a frequency of 50-100 Hz being applied between stainless steel substrate (4) and counterelectrode (3).

9. Process according to Claim 1, characterized in that substantially dendritic platinum clusters are deposited on a stainless steel substrate from a solution of a platinum compound in 0.1 M H_2SO_4 with

a platinum content of approximately 0.1 g/l as a result of a modulated voltage comprising a direct voltage (V_{dc}) of approximately 1.3 volts superimposed with an alternating voltage (V_{ac}) with a voltage swing (V_{PP}) of 0.3-1 volt and a frequency of 5-15 Hz being applied between stainless steel substrate (4) and counterelectrode (3).

10. Process according to Claim 1, characterized in that substantially dendritic rhodium clusters are deposited on a stainless steel substrate (4) from a solution of a rhodium compound in 0.1 M H_2SO_4 with a rhodium content of approximately 0.2 g/l as a result of a direct voltage (V_{dc}) of 1.4-1.6 volt being applied between stainless steel substrate and counterelectrode (3) and an alternating voltage (V_{ac}) with a voltage swing (V_{PP}) of 0.3-1.5 volts and a frequency of 5-15 Hz being superimposed.

11. Process according to Claim 8 or 9, characterized in that the size of the platinum clusters is between 2 nm and 1 µm.

12. Process according to Claim 1, characterized in that the counterelectrode (3) is formed by platinum-coated titanium.